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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/652,342

09/02/2003

Kenji Shimoyama

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1627

38834

7590

11/29/2005

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WASHINGTON, DC 20036

EXAMINER

DIAZ, JOSE R

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	Application No. 10/652,342	Applicant(s) SHIMOYAMA ET AL.	
	Examiner José R. Díaz	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10/19/05.  
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16-23 is/are pending in the application.  
 4a) Of the above claim(s) 21 is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 16-20, 22 and 23 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☒ All b) ☐ Some \* c) ☐ None of:  
 1. ☐ Certified copies of the priority documents have been received.  
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/274,767.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 19, 2005 has been entered.

### ***Response to Amendment***

2. Please correct the status of claim 21 from "Previously Presented" to --Withdrawn--.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under

37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 16-20 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsang (US Pat. No. 4,622,673) in view of Chen et al. (US Pat. No. 5,208,183).

Regarding claims 16 and 23, Tsang teaches a method of manufacturing semiconductor light-emitting device comprising the steps of:

growing a compound semiconductor epitaxial layer (3, 5, 7) including an active layer (5) and a cladding layer (3 and 7) on a substrate (1) (see fig. 1 and col. 4, lines 15-17);

forming a protective film (9) having an opening on a surface of the compound semiconductor epitaxial layer (3, 5, 7) (see fig. 1); and

selectively growing a ridge-shaped compound semiconductor epitaxial layer (11) to cover the opening (see fig. 1 and col. 4, lines 24-26).

With regards to the claimed materials AlGaAs, AlGaInAs, AlGaInP and AlGaInN, Tsang further teaches that the active layer (5) and cladding layers (3 and 7) comprise semiconductors such as Group III-V [col. 3, lines 65-67].

However, Tsang fails to teach the limitation of growing the compound epitaxial layer on a substrate having a surface having an off-angle of  $0.2^{\circ}$  to  $30^{\circ}$  to a crystallographic plane of (100) or (111).

Chen et al. teaches that it is well known in the art to grow a compound semiconductor layer on a misoriented [ $2^\circ$  off (100) towards (110)] GaAs substrate (see col. 6, line 16), wherein the compound semiconductor layer (layers 123-125) includes cladding layers (123 and 125) and an active layer (124) comprising AlGaAs (see layers 123-125) [see col. 6, lines 2-11].

Tsang and Chen et al. are analogous art because they are from the same field of endeavor as applicant's invention. At the time of the invention it would have been obvious to a person of ordinary skill in the art to grow an AlGaAs active layer and AlGaAs cladding layers over a misoriented [ $2^\circ$  off (100) towards (110)] GaAs substrate. The motivation for doing so, as is taught by Chen et al., is forming laser that can suppress lateral higher order modes (Abstract). Therefore, it would have been obvious to combine Chen et al. with Tsang to obtain the invention of claims 16-20 and 22.

Regarding claim 17, Tsang teaches that the compound semiconductor epitaxial layers including an active layer (15) further include a first conductivity type cladding layer (3) and a second conductivity type first cladding layer (7) (see fig. 1 and col. 4, lines 41-42).

Regarding claim 18, Tsang teaches that the ridge-shaped compound semiconductor epitaxial layer (11) includes a second conductivity type second cladding layer [consider the fact that the layer 11 is an epitaxial layer grown from the cladding layer 7 (col. 4, lines 19-20 and 23-26), which has a second conductivity type (i.e. p-type) (col. 4, lines 41-42)].

Regarding claim 19, Tsang teaches that the second conductivity type second cladding layer (11) is grown as to cover a portion of a surface of the protective film (9) (see fig. 1).

Regarding claims 20 and 22, Chen et al. teaches a GaAs substrate having a crystallographic plane of (100) (col. 6, line 16), which inherently has a zinc-blende structure.

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 16-20 and 22-23 have been considered but are moot in view of the new ground of rejection.

### ***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to José R. Díaz whose telephone number is (571) 272-1727. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2815

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "José R. Díaz", is positioned above the printed name.

José R. Díaz  
Examiner  
Art Unit 2815